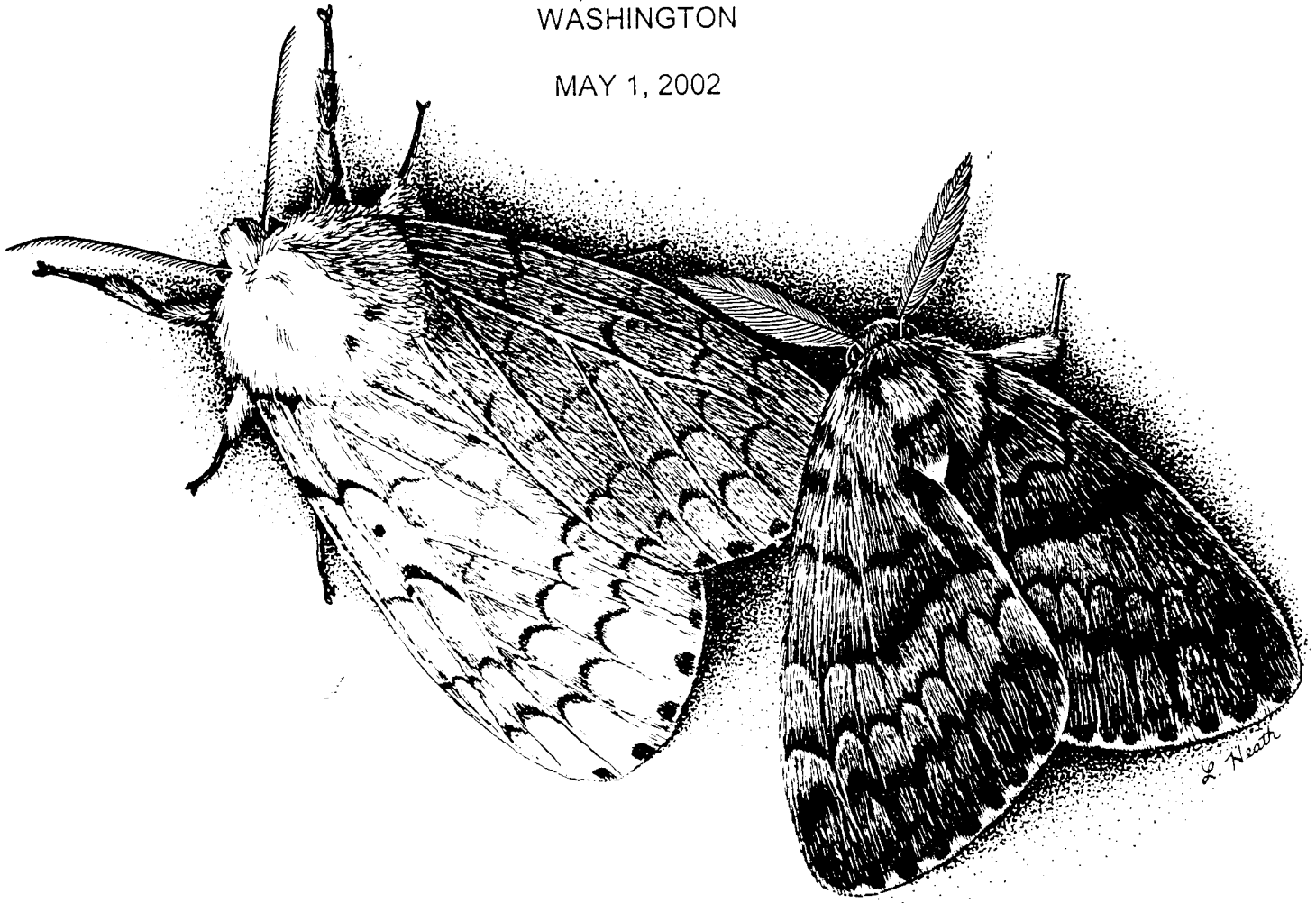


FINAL

ENVIRONMENTAL ASSESSMENT

COOPERATIVE GYPSY MOTH ERADICATION PROJECT  
KING and LEWIS COUNTIES  
WASHINGTON

MAY 1, 2002



Prepared by  
Washington State Department of Agriculture  
Laboratory Services Division

In cooperation with  
United States Department of Agriculture  
Animal and Plant Health Inspection Service  
Plant Protection and Quarantine



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## **I. PURPOSE AND NEED FOR ACTION**

### **A. Decisions to be Made and Scope of Analysis**

#### **1. Introduction**

The Washington State Department of Agriculture (WSDA), in cooperation with the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS), is proposing an eradication program with the goal of eliminating an isolated infestation of the non-native gypsy moth, Lymantria dispar, (Linnaeus), in King and Lewis Counties, Washington in the spring of 2002.

#### **2. Environmental Analysis and Documentation**

In 1995, the USDA Forest Service and APHIS prepared a final environmental impact statement, "Gypsy Moth Management in the United States: a cooperative approach", (hereinafter referred to as FEIS), which described and analyzed methods of gypsy moth control available for use in USDA cooperative programs. WSDA is proposing nothing that was not analyzed in the 1995 FEIS. Therefore, no new environmental impact statement programmatic analysis need be conducted.

This Environmental Assessment (EA) is "tiered" to the FEIS in accordance with the Council on Environmental Quality regulations for implementing the National Environmental Policy Act of 1969 (NEPA) (40 CFR 1502.20 and 40 CFR 1508.28). This EA provides the basic background information necessary for the site-specific analysis of the potential environmental effects of WSDA's proposed 2002 Cooperative Gypsy Moth Eradication Project required by NEPA and contained herein. The FEIS and this site-specific EA jointly constitute the environmental analysis and documentation required under NEPA.

Copies of the FEIS and the EA are available for review at:

Washington State Library  
Point Plaza East, Bldg. 1  
6880 Capitol Blvd. S  
Tumwater, WA 98501

and

USDA, APHIS, PPQ  
APHIS Library, 1st floor  
4700 River Road  
Riverdale, MD 20737

and

USDA, APHIS, PPQ  
22000 Marine View Drive S., Suite 201  
Des Moines, WA 98198

Additional environmental analysis and documentation has been prepared to satisfy Washington State requirements under Chapter 43.21 (c) of the Revised Code of Washington (State Environmental Policy Act or SEPA), and Chapter 197-11 of the Washington Administrative Code (SEPA rules).

Copies of the SEPA documentation are available for review at:

Washington State Library  
Point Plaza East, Bldg. 1  
6880 Capitol Blvd. S  
Tumwater, WA 98501

### **3. History and Scope of Project**

Since its accidental release in the United States in 1869, the European strain of gypsy moth has spread throughout New England and areas to the north, south and west and has become established in all or parts of 18 states, the District of Columbia, and parts of Canada. It continues to spread to uninfested areas. The gypsy moth has caused dramatic economic, social, and ecological impacts in the generally infested areas (USDA, 1995, vol. II, chapter 1, p. 4).

The European strain of the gypsy moth has been found every year in Washington State since 1974 with the exceptions of 1976 and 1977. Gypsy moth is usually introduced to Washington State by people visiting or relocating from the generally infested area of eastern North America. For more than 25 years, WSDA has successfully detected and eradicated new introductions of gypsy moth.

In 1991, the Asian strain of the gypsy moth was found for the first time in Oregon, Washington, and in British Columbia, Canada. Eradication projects conducted in 1992 successfully eliminated the insect from those areas. WSDA has found and treated introductions of the Asian strain of the gypsy moth in 1991-92, 1994-95, 1995-96, 1996-97, 1997-98 and 1999-2000. These eradication projects have been successful. The Asian strain poses a far greater risk of rapid spread than the European. Unlike females of the European strain, females of the Asian strain may fly and deposit an egg mass miles from where they fed as caterpillars. The Asian strain also poses a greater risk of damage because it feeds on a greater variety of plants (USDA, 1995, vol. II, chapter 1, p. 4).

In 2002, WSDA is proposing to treat two isolated sites that have reproducing populations of the European strain of the gypsy moth. One site is located in the Crown Hill neighborhood of Seattle in King County and the other is located in the Vader area of Lewis County.

For more information on how the different strains/populations of the gypsy moth are to be treated please see USDA, 1995, vol. II, chapter 1, pp. 9-11.

#### **4. Decisions to be Made**

The first decision to be made is whether or not to have a gypsy moth control project (the absence of a control project is a no action alternative). The second decision to be made is whether or not tiering this environmental assessment to the USDA 1995 FEIS is appropriate. The third decision to be made is whether to proceed with the preferred alternative as described in the FEIS.

#### **B. Proposed Action**

Strategies described in the FEIS depend upon the infestation status of the area: generally infested, transition, or uninfested. The three strategies of suppression, eradication, and slow the spread -- or their absence -- make up the six alternatives described in the FEIS. The sixth alternative is the preferred alternative presented in the FEIS. The sixth alternative is comprised of all three strategies. The strategy utilized is determined by infestation status. Because of Washington State's infestation status, the strategy implemented will be eradication.

For a more detailed description of the alternatives described in the FEIS, please refer to an excerpt from the FEIS in Appendix C of this EA.

Treatments available for eradication projects include: (the biological insecticides) Bacillus thuringiensis var. kurstaki (B.t.k.) and the gypsy moth nucleopolyhedrosis virus (Gypchek); a chemical insecticide (diflubenzuron); and treatments employing mass trapping, mating disruption, and sterile insect release techniques. A detailed description of these treatments is available in Appendix A of the FEIS.

#### **C. Need For Action**

##### **1. Economic, Social, and Ecological Impacts**

In order to avoid undesirable economic, social, and ecological impacts to individuals, communities and businesses in Washington State, WSDA in cooperation with USDA APHIS, is proposing to eradicate two isolated infestations of gypsy moth. One is in the **Crown Hill** neighborhood of Seattle in King County and the other is **Vader** located in Lewis County.

Gypsy moth trapping (which employs pheromone-baited traps), egg mass surveys and/or inspections have detected gypsy moth infestations in the aforementioned areas. The gypsy moth is able to survive and reproduce in Washington State, as evidenced by past isolated infestations. The current infestations could, if left unchecked, spread across large areas.

Trees in forests and orchards, and residential and municipal shade trees and landscape plantings would be damaged and killed. Recreational and aesthetic values associated with trees and forested land would be diminished (USDA, 1995, vol. II, chapter 2, p. 29). Species composition of the vegetation on forested land could change, affecting the quantity and variety of food available for wildlife (USDA, 1995, vol. II, chapter 2, p. 23).

Water quality could be adversely affected in a number of ways including: 1) increased siltation from rapid runoff of rainfall from defoliated areas; 2) increases in water temperature as it flows through areas made shadeless; and 3) nutrient overloading from the deposition of large quantities of caterpillar droppings (USDA, 1995, vol. II, chapter 2, pp. 24-25).

The pesticide load in the environment would likely increase in quantity, variety, and net detrimental environmental impact as home and business owners take action in response to ever-increasing numbers of gypsy moth caterpillars, the damage they cause, and the nuisance they represent (USDA, 1995, vol. II, chapter 4, p. 76).

Human health effects associated with the presence of large numbers of gypsy moth caterpillars have been reported, including rashes and welts typical of allergic reactions, and respiratory complaints. These effects have been attributed to the irritating nature of the bristles found on the caterpillars. In some instances the reactions have been severe enough to require medical attention (USDA, 1995, vol. III, chapter 3, pp. 2-3), (Allen et al., 1991), (Tuthill, et al., 1984), (Aber, et al., 1982), (Beaucher and Farnham, 1982), (Shama, et al., 1982).

Agricultural, horticultural, and forestry enterprises are dependent upon markets beyond the borders of Washington State. Washington must be able to comply with the plant pest and disease regulations of the Federal government, other states, and international markets. The establishment and spread of the gypsy moth in Washington State would result in the imposition of quarantines (USDA, 1995, vol. II, chapter 2, p. 29). The levels of production and value of plant products would be adversely affected.

## **2. Project Goals and Objectives**

The WSDA, in cooperation with USDA-APHIS and other appropriate Federal, State and local agencies, proposes to take action to eradicate two isolated infestations of gypsy moth. One is in the Crown Hill neighborhood of Seattle in King County and the other is located in Lewis County in the town of Vader. The action will be designed to give the project the best chance for achieving the goal of eradicating the gypsy moth infestations while minimizing risks to human health as well as minimizing detrimental environmental consequences. This action will be taken in order to prevent the establishment and spread of this pest insect and thereby avoid the adverse economic, social, and ecological effects associated with large-scale gypsy moth infestations.

### **D. Authorizing Laws and/or Policies**



## **1. State Authorizing Laws**

WSDA has authority under Chapter 17.24 of the Revised Code of Washington, Insect Pests and Plant Diseases, to eradicate or control insect pests that may endanger the agricultural and horticultural industries in the state of Washington.

## **2. Federal Authorizing Laws**

The USDA-APHIS has broad discretionary authority to prevent the establishment or spread of plant pests. See 1995 FEIS, volume 2, chapter 1, pages 8 and 9, "Statutory Authorities", for more information.

## **3. Environmental Laws and Other Regulations**

Many environmental laws, authorities and Executive Orders of the President influence how actions to manage pests, including the gypsy moth, are implemented at the site-specific level. Such laws include the National Environmental Policy Act; Washington State Environmental Policy Act; Federal Insecticide, Fungicide, and Rodenticide Act; and the Endangered Species Act. See 1995 FEIS, volume 2, chapter 1, pages 8 and 9, "Statutory Authorities", for more information.

## **II. PUBLIC INVOLVEMENT AND ISSUES**

### **A. Public Notification and Involvement**

In the summer of 2001 initial contact was made with residents in what would later become the proposed treatment zone in conjunction with searching the area for gypsy moth egg masses.

On December 21, 2001 a press release was sent to the media announcing that a formal proposal had been made to treat 560 acres in Vader and 16.5 acres in Crown Hill neighborhood of Seattle in the spring of 2002 for an infestation of the European gypsy moth. The press releases also informed the media of the upcoming opportunity to review and comment on both the SEPA Checklist and NEPA Draft EA.

On January 21, 2002 a letter was sent to 222 residents in or adjacent to the proposed gypsy moth treatment site in Vader. On February 11, 2002 a similar letter was sent to 139 residents in or adjacent to the proposed treatment site in Crown Hill. The letters: 1) explained the nature of the gypsy moth infestation detected in their communities last summer, 2) stated that a formal proposal had been made to treat a 560-acre site in Vader and 16.5 acre site in Crown Hill to eradicate the infestation, 3) invited residents to open houses in their respective communities (at the Vader Elementary School on January 29<sup>th</sup> and Whittier Elementary School on February 19<sup>th</sup>) where they would be able to review material and ask questions and 4) informed them of the upcoming opportunity to review and comment on both the SEPA Checklist and NEPA Draft EA.

Attached to each letter was a gypsy moth fact sheet, map of the proposed treatment zone in their community, and the December 21, 2001 press release.

On January 18, 2001 a press release was sent to the media announcing that a gypsy moth open house would be held on January 29<sup>th</sup> from 6 p.m. to 8 p.m. in the Vader Elementary School cafeteria. On February 8<sup>th</sup> a press release was sent to the media announcing that an open house would be held on February 19<sup>th</sup> from 6 p.m. to 8 p.m. at the Whittier Elementary School in the Crown Hill neighborhood of Seattle.

On January 29<sup>th</sup> a widely publicized, well-attended open house was held in Vader in the Vader Elementary School cafeteria. On February 19<sup>th</sup> a similar open house was held in the Crown Hill neighborhood of Seattle at the Whittier Elementary School.

In mid-March legal notices appeared in newspapers in Vader and Crown Hill, announcing the availability of a State Environmental Policy Act (SEPA) checklist for a 30-day-public-review-and-comment period.

In late March 2002 legal notices appeared in newspapers in Vader and Crown Hill, announcing the availability of the Draft National Environmental Policy Act (NEPA) Environmental Assessment (EA) for a 30-day-public-review-and-comment period.

Publication notification and involvement also included: 1) Answers to calls made to the toll-free hotline (1-800-443-6684) and to emails sent to the WSDA Pest Program. 2) Special communications with stakeholders in Vader and Crown Hill (city council members, county commissioners, state legislators, and others), keeping them up to date on gypsy moth program activities and events. 3) Special presentations before community groups, giving details of the infestation, proposed treatment, and open houses. 4) Availability of current gypsy moth information on the WSDA web page ([www.wa.gov/agr/gypsy.htm](http://www.wa.gov/agr/gypsy.htm)).

## **B. Issues and Concerns**

Concerns were raised about the proposed treatments, their effects on human health and on non-target organisms. Those issues raised are addressed in this EA and in the FEIS to which this EA is “tiered”.

## **III. AFFECTED ENVIRONMENT**

### **A. 2002 SITE DESCRIPTIONS** (see Appendix B for maps)

Crown Hill (Seattle North, WA 7.5' quadrangle, S1 T25N R3E)

- King County, Washington

- Approximately 16.5 acres

Zoning: SF-5000

- Approximately 102 properties in the proposed treatment area.
- Proposed Boundaries: The northern boundary is 83<sup>rd</sup> St. NW, the southern boundary is approximately two properties south of 80<sup>th</sup> St. NW, the eastern boundary is 8<sup>th</sup> Ave. NW, and the western boundary is 10<sup>th</sup> Ave. NW.
- Vegetation  
The proposed treatment area is primarily comprised of deciduous trees with a few coniferous trees growing in the area. Canopy coverage varies and averages less than 10%, tree height also varies.

Critical/Sensitive Areas: None

- Catch History  
3 European gypsy moths were caught in the area during the 1999 summer survey.  
1 European gypsy moth was caught in the area during the 2000 summer survey.  
8 European gypsy moths were caught in the area during the 2001 summer survey.
- Alternate Life Stages  
4 European gypsy moth egg masses and 5 pupal cases were found in this area in the late summer of 2001.

Vader (Winlock, WA 7.5' quadrangle, S29, 30, 31, 32 T11N R2W)

- Lewis County, Washington
- Approximately 560 acres

Zoning: R1 Residential Single Family  
R2 Residential Multi Family  
R3 Residential Multi Family Hi-density  
C Commercial  
CS Community Services  
C/RV Commercial/Recreational Vehicles

- Approximately 203 properties in the proposed treatment area.
- Proposed Boundaries: The northern boundary is approximately ¼ mile south of Awmiller Rd. and crosses Olequa Creek at Little Falls, the southern boundary is 10<sup>th</sup> St., the eastern boundary is E St., and the western boundary is approximately 300 feet west of Maschke Rd.
- Vegetation  
The proposed treatment area is a mix of deciduous and coniferous trees growing in and around residential properties and pastureland. Canopy coverage varies and averages less than 25%, tree height also varies.
- Critical/Sensitive Areas: Wetlands  
Flood Prone Areas  
Fish & Wildlife Habitats  
Slope over 30%

Conservancy Shorelines  
Environmental Designation

- Catch History  
76 European gypsy moths were caught in this area during the 2000 summer survey.  
10 European gypsy moths were caught in this area during the 2001 summer survey.
- Alternate Life Stages  
6 European gypsy moth egg masses were found in this area in the late summer of 2000.  
4 European gypsy moth egg masses were found in this area in the fall of 2000.

**B. Threatened, Endangered, and Sensitive Species**

As required by the Endangered Species Act of 1973, the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the Washington State Department of Fish and Wildlife (WDFW) and the Washington State Department of Natural Resources (DNR) have been consulted. These agencies provided maps and other data intended to aide in the identification of habitats of concern and the presence of listed, proposed, candidate, threatened or endangered species. See Appendix G.

The USFWS has reviewed the areas for the presence of threatened or endangered species. At the Vader site the listed species bull trout and the proposed species coastal cutthroat trout were named as “may occur in the vicinity of the Project.” At the Crown Hill site the listed species bull trout was named as “may occur in the vicinity of the Project.” See Appendix G.

The USFWS also listed a bald eagle nesting territory in the vicinity of the project at the Crown Hill site. Nesting activities occur from January 1 through August 15. The WSDA has determined that nesting bald eagles will not be adversely effected by this project which is occurring over one mile from the nesting site. See Appendix G.

The USFWS also listed wintering bald eagles as “may occur in the vicinity of the project” at both sites from October 31 through March 31. WSDA has determined that wintering bald eagles will not be adversely effected by this project which is conducted from April 15 through June 30. See Appendix G.

The USFWS has been contacted by USDA concerning the above species. The WSDA will not engage in any activity that would constitute harassment of bull trout, coastal cutthroat trout or bald eagles.

The NMFS has listed the Lower Columbia River steelhead, Lower Columbia River chinook and Columbia River chum as threatened in the Vader area. The Lower Columbia River/SW Washington coho is a Candidate for listing in the Vader area. The NMFS has been contacted by USDA concerning the above species. The WSDA will not engage in any activity that would constitute harassment of these named salmonid species.

Information provided by WDFW Priority Habitats and Species Program did not identify any threatened or endangered species on this site, however, coho salmon, searun cutthroat and winter steelhead were listed as occurring in Olequa Creek, also, coho salmon and searun cutthroat were listed as occurring in Stillwater Creek. WDFW also listed a number of osprey nesting sites located over one mile outside the area.

A retrieval of information from the WDFW butterfly database did not name any threatened, endangered or sensitive species on this site, however, a record of a state candidate species, the Whulge or Taylor's checkerspot (*Euphydryas editha taylori*), was found approximately 5 miles from the proposed project. After consultation and conducting a site visit WDFW stated that this site "is unlikely to support Whulge checkerspot" and that "there is a very low probability that the proposed 2002 gypsy moth eradication effort will effect populations of this rare butterfly." WSDA concurs with the determination that the 2002 Gypsy Moth Eradication Program is unlikely to effect populations of the Whulge checkerspot. See Appendix G.

The DNR Washington Natural Heritage Program reviewed their Natural Heritage database. The DNR found no records for rare plants or high quality ecosystems in the vicinity of this project. See Appendix G.

### **C. Other Environmental Consultation**

The USDA is taking part in Endangered Species Act Section 7 consultation with both the United States Department of Interior Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

## **IV. TREATMENT ALTERNATIVES**

### **A. Treatment Alternatives**

WSDA is proposing to conduct an Integrated Pest Management (IPM) program to eradicate gypsy moth in Washington State. Integrated Pest Management involves selecting those options and techniques that give the best chance of meeting the project goal of eradication. The FEIS contains a range of alternatives from which WSDA has selected an IPM strategy. The treatment alternatives detailed in the FEIS include:

1. Bacillus thuringiensis var. kurstaki (B.t.k.)
2. Diflubenzuron
3. Gypchek
4. Mass trapping
5. Mating disruption
6. Sterile release

## **B. Preferred Treatment Alternative**

The WSDA/USDA-APHIS gypsy moth eradication project IPM strategy proposed for 2002 includes the use of the biological insecticide (B.t.k.) Foray 48B (EPA Reg. No. 73049-46). This insecticide may be mixed with the spreader-sticker Plyac for ground applications. Treatments will be followed by delimiting trapping, inspections for egg masses, and removal of egg masses where found. This IPM strategy will give the project the best chance for achieving the goal of eradicating the gypsy moth infestations while minimizing risks to human health as well as minimizing detrimental environmental consequences. Details of ground and aerial applications follow:

### **Ground Application:**

The proposed action would involve three applications of Bacillus thuringiensis var. kurstaki (B.t.k.) with ground-based equipment at a rate of 24 Billion International Units (BIU) per acre to foliage within the designated treatment areas at Crown Hill and Vader. The applications will be made 7-14 days apart and will occur during the period between April 15 and June 30, 2002. Provisions will be made for the possibility of a fourth ground application of B.t.k. if substantial rainfall occurs too soon following the completion of an application. Exact timing of the applications will be dependent on development of gypsy moth larvae and/or foliage as determined by WSDA.

A spreader-sticker (Plyac) may be utilized as an adjuvant for ground applications at the rate of 4 ounces per 100 gallons of tank mix. Mixing the formulation with adjuvants for gypsy moth eradication projects has been common practice (USDA, 1995, vol. II, A-4). All ground applications would be conducted in accordance with all applicable federal, state, and local laws and regulations, and would adhere to the Standard Operating Procedures developed by WSDA for this project. See Appendix F.

### **Aerial Applications:**

The proposed action would involve three applications of the biological insecticide Bacillus thuringiensis var. kurstaki (B.t.k.) applied aurally, at a rate of 24 BIU per acre, to the designated treatment area in Vader. Some areas within this site may be treated with ground-based equipment. The aerial applications will be made neat, 7-14 days apart, and will occur during the period between April 15 and June 30, 2002. Exact timing of the applications will be dependent on development of gypsy moth larvae and/or foliage as determined by WSDA. The aerial applications would be conducted in accordance with all applicable federal, state, and local laws and regulations, and would adhere to the Standard Operating Procedures developed by WSDA for this project. See Appendix F.

### **Follow up:**

Trapping of male gypsy moths in the summer of 2002, by employing pheromone-baited traps will follow up all ground and aerial applications. This will contribute to the success

of the eradication project by removing males from any residual population, delimiting the location of any residual populations of Gypsy moths, and aiding in the evaluation of the project.

In the event of multiple moth catches in a treatment area, egg mass inspections would be performed in the fall of 2002 to aid in determining if re-treatment actions should be considered in order to achieve the project goal of eradicating Gypsy moth infestations.

### **C. Treatment Alternatives Not Selected**

The remaining treatment alternatives available for this proposed eradication project, as outlined in the FEIS, were not selected due to lack of availability, unproven efficacy, or environmental/biological concerns (USDA, 1995, vol. II, pp. A3-10).

## **V. ENVIRONMENTAL CONSEQUENCES**

### **A. Human Health and Safety**

#### **1. *Bacillus thuringiensis* var. *(kurstaki)* (B.t.k.)**

The use of B.t.k. for the eradication of isolated gypsy moth infestations is expected to have no adverse impact on human health or the environment. Various strains of *Bacillus thuringiensis* (B.t.) are a naturally occurring bacterial component of soils worldwide. Modern aqueous formulations of B.t.k. used in gypsy moth control projects contain no organic solvents and have an excellent safety record associated with their use in gypsy moth suppression and eradication projects. An exemption from the requirement of a tolerance has been established for residues of B.t.k. in or on all raw agricultural commodities. This exemption stipulates that manufacturers of B.t.k. test each lot for pathogenicity and vertebrate toxicity. Specimen product labels and a Material Safety Data Sheet (MSDS) for Foray 48B (EPA Reg. No. 73049-46), the B.t.k. formulation proposed for use in this project, can be found in Appendix E.

A detailed discussion of the human health effects of B.t.k. may be found in the 1995 FEIS vol. II, chapter 4, pp. 13-17, and in vol. III, chapter 4.

Due to advances in scientific knowledge, the law requires that pesticides which were first registered before November 1, 1984 be reregistered to ensure that they meet today's more stringent standards. In March of 1998 the United States Environmental Protection Agency came out with a Reregistration Eligibility Decision (EPA, 1998) in which they concluded:

Based on the reviews of the generic data for the active ingredient *Bacillus thuringiensis*, the Agency has sufficient information on the health effects of *Bacillus thuringiensis* and on its potential for causing adverse effects in fish and wildlife and the environment. The Agency has determined that *Bacillus thuringiensis* products, manufactured, labeled and used as specified in this

Reregistration Eligibility Decision, will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, the Agency concludes that products containing *Bacillus thuringiensis* for all uses are eligible for reregistration (EPA, 1998).

In the spring of 1999, Foray 48B was applied by aircraft to 52 square miles of Southern Vancouver Island to combat an infestation of European gypsy moth. Approximately 80,000 residents lived in the spray zones. The Capital Health Region coordinated a human health study of possible short-term health effects. The resulting report (Capital Health Region, 1999) concluded:

The results of this project did not show a relationship between aerial spraying of Foray 48B and short-term human health effects. Although some people self-reported health problems that they attributed to the spray program, the research and surveillance methods used in this project did not detect any change in health status that could be linked to the spray program. Our results showed that many of the health complaints people reported during the spray were as common in people before the spray as they were shortly after the spray. This conclusion is consistent with those of previous studies of the possible health effects of Btk-based pesticide spray programs (Capital Health Region, 1999).

Exposure to B.t.k. spray resulting from its use as proposed in this gypsy moth eradication project is unlikely to cause significant human health effects. However, it is good practice to minimize exposure to any insecticide. One of the conclusions reached in the Oregon study by Green, et al.(1990), was that, "the level of risk for B.t.k. and other existing or future microbial pesticides in immunocompromised hosts deserves further study."

In addressing the issue of exposure to immunocompromised individuals and the general public to the aerial treatments proposed in Vader, the following recommendations were made by the Washington State Department of Health in January, 2002 (Appendix D).

The Washington State Department of Health (DOH) and the Lewis County Public Health Department recommend that people in the area to be sprayed minimize exposure by doing the following:

1. Stay indoors for at least 30 minutes after the spraying to allow droplets to settle.
2. Wait until the spray has dried before letting skin touch the treated leaves and bushes.
3. Wash skin with soap and water if you come in contact with the spray.



4. People in the sprayed area can sign up with the Department of Agriculture (800-443-6684) to be notified the day before spraying. (WSDOH, 2002, see Appendix D)

## 2. Plyac

Plyac may be used as an adjuvant with the insecticide utilized in this proposed eradication program. Plyac is a non-ionic spreader-sticker which acts as an adjuvant when mixed with insecticides. Plyac is not an eye or primary skin irritant per the Federal Hazardous Substances Labeling Act. In the unlikely event that overexposure were to occur, local irritation might be possible, especially in sensitive individuals. Systemic toxic effects are unlikely. See Appendix E for Label and MSDS.

## 3. General Precautions

The WSDA will take the following additional steps to assist the public in avoiding or reducing exposure to the spray material:

1. The Pesticide Sensitive Individuals database, maintained by the Pesticide Management Division of the WSDA, will be checked for people living in or near the proposed treatment area who require advance notification.
2. The WSDA will offer a toll-free telephone line with information regarding scheduled treatment days.
3. The WSDA will provide notification calls the day before scheduled applications to any resident in the proposed treatment area requesting them.
4. During ground treatments WSDA on-site spray block monitors will notify residents before the actual application to their property.
5. During ground treatments WSDA on-site spray block monitors will notify bicyclists, joggers and other pedestrians that they are approaching the treatment area.
6. Information will be provided to residents of the treatment area about how to avoid or reduce exposure to the spray material.

## **B. Non-Target Organisms**

### 1. Animals

Bacillus thuringiensis var. (kurstaki) (B.t.k.)

A detailed discussion of the ecological effects of B.t.k. on non-target organisms may be found in the 1995 FEIS vol. II, chapter 4, pp. 52-55, and in vol. IV, chapter 5, pp. 5-10.

As used in gypsy moth eradication projects, B.t.k. has not been shown to adversely affect fish, birds, mammals, or most non-target insects, including honey bees (USDA, 1995, vol. II, chapter 4, pp. 54-55). It is expected that B.t.k. may kill other lepidopteran larvae (leaf-eating caterpillars) if they are present in project areas when treatments occur. In turn, animals dependent on caterpillars as food theoretically may be affected. However, reductions in native caterpillar populations are expected to be temporary due to the brief residual effectiveness of B.t.k. deposits on foliage (4 to 10 days), the high reproductive capacity of most lepidoptera, and recolonization from adjacent untreated areas (USDA, 1995, vol. II, chapter 4, pp. 54-55). The small size of the proposed treatment areas should aid in the recolonization process.

A study conducted in Oregon in connection with gypsy moth control programs in 1986 and 1987 found reduced numbers of caterpillars immediately following B.t.k. treatments and reduced species diversity. This study also found that recovery in numbers of non-target caterpillars began the same season, but that recovery of species diversity lagged behind (Miller, 1990).

A recent study has shown that B.t.k. could interfere with the biological control of the noxious weed tansy ragwort by cinnabar moth larvae if applied to areas where the weed occurs when late-instar larvae are active (James, et al., 1993). However, an intentionally introduced species of flea beetle has more impact as the primary biological control agent on tansy ragwort (L.C. Burrill, et al. 1994). It is not anticipated that this proposed project will have any adverse impact on flea beetle populations.

Two studies examined the indirect effect of B.t.k. on the reproductive success of insectivorous birds through a possible reduction in food supply. The studies reported no significant differences between treated and untreated areas in numbers of eggs hatched or in nestling growth and development. When caterpillars weren't available, the birds switched to other available prey (Gaddis, 1987), (Gaddis and Corkran, 1986).

There is no evidence of significant adverse impacts of B.t.k. on aquatic organisms. In a study conducted on a benthic stream community there was no evidence that addition of B.t.k. to stream mesocosms created adverse effects for this community, even at greater than 100 times expected exposure rates (Richardson and Perrin, 1994).

## 2. Plants

### Bacillus thuringiensis var. (kurstaki) (B.t.k.)

B.t.k. is non-toxic to plants. B.t.k. is sensitive to meteorological effects once it has been applied to plant surfaces. B.t.k. is readily removed from plant surfaces by rain and is rapidly degraded by sunlight (USDA, 1995, vol. IV, chapter 7, pp. 15). The use of Plyac will help slow the removal of B.t.k. by both rain and sunlight.

Changes in soil productivity and fertility due to B.t.k. are not likely. B.t.k. persists for a relatively short time, B.t. is known to occur naturally in soils worldwide, and applications of insecticides containing B.t. do not appear to increase levels of B.t. in soil (USDA, 1995, vol. I, p. 19). For more information about the fate of B.t.k. in the soil refer to 1995 FEIS, vol. 4, chapter 7, p. 16.

### 3. Threatened, Endangered, and Sensitive Species

In reference to the threatened, endangered, and sensitive species listed in the Affected Environment section of this EA and in Appendix G as possibly occurring/occurring in the vicinity of the proposed treatment areas, it is not anticipated that the proposed use of B.t.k. would adversely effect these named species.

Specifically with regard to the threatened and candidate salmonid species listed in Appendix G as likely to be found near the proposed treatment sites, B.t.k. has been tested in solution with certain salmonids and other fish species. Data supplied to the Environmental Protection Agency for the registration of B.t.k., showed no adverse effects to rainbow trout, bluegill sunfish, and sheepshead minnows at 100x the maximum expected environmental concentration over a 30-day time period (USDA, 1995, vol. IV, p. 5-51). Therefore it is not anticipated that the proposed use of B.t.k. would adversely effect these species.

## **VI. MONITORING**

During the treatment operation, a WSDA-designated monitor will observe all mixing and application of the spray material to ensure compliance with all federal, state, and local laws and regulations and adherence to the Standard Operating Procedures. See Appendix F.

The treatment sites will be intensively monitored in the summer of 2002 using pheromone-baited traps to determine the effectiveness of the treatment, assist in the eradication, and delimit any residual populations of gypsy moths. This monitoring may indicate a need for further action.

No environmental sampling will be done in connection with this project. Applications of B.t.k. for gypsy moth eradication have not been shown to cause long-term environmental effects.

## **VII. CUMULATIVE EFFECTS**

No cumulative effects due to the proposed treatment action are anticipated.

## **VIII. SUMMARY**

This EA has analyzed the potential environmental effects of the proposed WSDA and USDA APHIS treatment program. This analysis was based on the 1995 USDA FEIS

entitled, "Gypsy Moth Management in the United States: a cooperative approach" and the preferred alternative strategy proposed by the Washington State Department of Agriculture and USDA-APHIS for eradicating Gypsy moths at two sites in Washington State. The WSDA/USDA-APHIS gypsy moth eradication project strategy proposed for 2002 includes the use of the biological insecticide (B.t.k.) and the spreader-sticker Plyac, followed up by trapping, inspections for egg masses, and removal of egg masses where appropriate. It is felt that this IPM strategy will give the project the best chance of achieving the goal of eradicating the gypsy moth infestations while minimizing risks to human health as well as minimizing detrimental environmental consequences.

To summarize:

- A. B.t.k. used as described in this Environmental Assessment presents minimal risk of significant impact on human health.
- B. It is not anticipated that any non-target animal or plant populations would be adversely affected due to the limited size of the treatment areas. Any detrimental effects on susceptible non-target organisms would be transient and these populations would recover as individuals from nearby untreated areas re-colonized the treatment areas.
- C. Threatened, endangered, and sensitive species would not be adversely affected by this eradication project. Measures will be taken to protect the threatened, endangered, and sensitive species named in this EA.
- D. No detrimental effects on vegetation, water, or soil are known or anticipated due to this eradication project.
- E. No cumulative effects are known or anticipated.

## **IX. LIST OF AGENCIES AND PERSONS CONSULTED**

United States Department of Agriculture, Animal and Plant Health Inspection Service, Nancy Sweeney & Dr. Charles Divan, on content and style of EA.

Washington State Department of Health, Barbara Morrissey, for review of the proposed treatment with regard to human health concerns.

United States Fish and Wildlife Service, Mr. Jim Michaels, for review of proposed treatment area for the presence of threatened and endangered species.

National Marine Fisheries Service, Mr. Tom Sibley, for information on threatened, endangered and candidate salmonid species.

Washington State Department of Natural Resources, Natural Heritage Program, Ms. Sandy Swope Moody, for review of the proposed treatment area for the presence of sensitive species or habitats.

Washington State Department of Fish and Wildlife, Ms. Lori Guggenmos, for review of the proposed treatment area for the presence of sensitive species or habitats.

Washington State Department of Fish and Wildlife, Ms. Ann Potter, for review of the proposed treatment area for the presence of sensitive lepidopteran species.

## **X. LIST OF PREPARERS**

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## **XI. APPENDICES**

- A. [References](#)
- B. [Treatment Site Maps](#)
- C. [Alternatives Described in 1995 FEIS](#)
- D. [Washington State Department of Health Recommendations](#)
- E. [Product Labels & Material Safety Data Sheets](#)
- F. [Standard Operating Procedures](#)
- G. [Letters and Permits received through interagency consultation concerning threatened, endangered, and sensitive species and habitats](#)